



# MEETING THE PROJECT MANAGEMENT CHALLENGE

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## Abstract

### *"Return to Flight Project Management – Perspectives from the On-Orbit Tile Repair Project"*

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The Columbia Accident Investigation Board (CAIB) Report included several recommendations to be implemented before return to flight. These recommendations included developing "a practicable capability to inspect and effect emergency repairs to the widest possible range of damage to the Thermal Protection System (TPS), including both tile and Reinforced Carbon-Carbon (RCC)." Shortly after the accident, a team of experts from the TPS engineering, mission operations and extravehicular activity organizations at Johnson Space Center (JSC) – working in collaboration with their counterparts at other NASA centers and contractors – made significant progress in identifying the issues that need to be addressed to accomplish on-orbit vehicle inspection and repair. The team was able to define preliminary criteria for damage that must be repaired on orbit, identify all critical areas that must be reached for inspection, identify candidate on-orbit repair materials capable of withstanding the stress of entry, and design initial tools and techniques that will allow spacewalkers to repair critical damage to both tiles and RCC segments. This team's work evolved into three distinct projects led by the Space Shuttle Program's Orbiter Project Office at JSC:

- A Boom and Sensor System to provide additional inspection and repair access.
- Tile Repair Project team, and
- An RCC Repair Project team.

The presentation will describe the progress and insights from one of these three return to flight projects – the On-Orbit Tile Repair Project team. The Tile Repair Project has involved development of a qualified repair material, development of certified extravehicular activity tools, and the development of analytical tools to support real-time decision making.



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